

# **MECHANISM FOR RAPIDLY INSTALLING AND DETACHING HARD DISK**

## **FIELD OF THE INVENTION**

The present invention relates to hard disk fastening mechanisms and  
5 more particularly to an improved mechanism mounted in a hard disk frame  
capable of rapidly installing the hard disk in a computer and detaching the hard  
disk from the computer.

## **BACKGROUND OF THE INVENTION**

10 Conventionally, a plurality of screws are employed to fasten a hard disk in  
a frame inside a computer case. The hard disk is electrically coupled to a  
circuit board by means of data and power cables. The operating power of the  
hard disk is supplied by the circuit board. Also, data can be transferred  
15 between the hard disk and the circuit board. However, the disassembly of the  
hard disk is very tedious when a replacement of the hard disk is required due to  
malfunctioning or upgrading for a new hard disk of higher capacity. First, a user  
has to detach the cover of the computer case. Next, detach the hard disk from  
the frame. Next, install a new hard disk in the frame. Finally, fasten the cover  
20 on the computer case. It is understood that downsizing is the trend of modern  
computers. Thus, the prior art arrangement has difficulty in installing a hard  
disk in the computer or detaching the hard disk from the computer due to  
narrow internal space of the computer. Hence, a need for improvement exists.

## **SUMMARY OF THE INVENTION**

25 A primary object of the present invention is to provide a novel mechanism  
for rapidly installing and detaching a hard disk. By utilizing the present  
invention, the above drawback of tedious installation and disassembly of the

hard disk experienced by the prior art can be overcome.

One object of the present invention is to provide a mechanism for rapidly installing and detaching a hard disk, comprising a U-shaped handle pivotally mounted at both sides of the hard disk, the handle having a width slightly larger than that of the hard disk, the handle including a latch in a forward side; and a frame for receiving the hard disk, the frame including an elastic member in a forward end, the elastic member including a projection on a side, the projection being adapted to engage with the latch. While installing the hard disk in the frame, the handle is pivoted down into a gap between the hard disk and the frame, enabling the latch of the handle to be engaged with the projection of the frame and the sides of the hard disk to urge against the frame and the handle for fastening the hard disk in the frame. Thus, the hard disk together with the frame can then be inserted into a slot of a computer case. While detaching the hard disk from the frame, it only needs to push the projection outward until the projection is disengaged from the latch and then pull the handle upward to remove the hard disk from the frame. By utilizing the mechanism of the present invention, a user can easily install the hard disk in the computer and detach the same from the computer for repair, maintenance, or upgrading.

The above and other objects, features and advantages of the present invention will become apparent from the following detailed description taken with the accompanying drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a hard disk mounted in a frame incorporating a mechanism according to the invention, where the hard disk is not fastened by the mechanism;

FIG. 2 is a view similar to FIG. 1, where the hard disk is fastened by the

mechanism; and

FIG. 3 is a cross-sectional view of the hard disk, the mechanism, and the frame, where the hard disk is fastened by the mechanism; and

FIG. 4 is a view similar to FIG. 3, the hard disk being shown during  
5 fastening.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIGS. 1 and 2, there is shown a mechanism for rapidly installing and detaching a hard disk in accordance with the invention. The  
10 mechanism is incorporated in a frame 20 which is adapted to receive a hard disk 10. Note that the frame 20 is also adapted to receive a floppy disk, CD-ROM drive, or the like in other embodiments without departing from the scope and spirit of the invention. A U-shaped handle 13 is pivotally mounted at both sides 11 of the hard disk 10 in which two ends of the handle 13 are pivotal  
15 about the sides 11 of the hard disk 10. A width of the handle 13 is slightly larger than that of the hard disk 10 for permitting the handle 13 to pivot about the hard disk 10. The handle 13 comprises a latch 131 in the forward. Correspondingly, an elastic member 21 is formed in a forward end of the frame 20. A rounded projection 211 is formed on a side surface of the elastic member 21. The  
20 projection 211 is capable of securing to the latch 131.

Referring to FIG. 3 in conjunction with FIGS. 1 and 2, an operation of installing the hard disk 10 in the frame 20 will be described in detail below. First, pivot the handle 13 down and press it into a gap 15 between the hard disk 10 and the frame 20. As such, the latch 131 of the handle 13 is engaged with the  
25 projection 211 of the frame 20. Thus, the sides 11 of the hard disk 10 are fastened by the frame 20 and the handle 13. As an end, the hard disk 10 is fastened by the frame 20. Finally, insert the hard disk 10 together with the

frame 20 into a slot of a computer case.

Referring to FIG. 4 in conjunction with FIG. 1, an operation of detaching the hard disk 10 from the frame 20 will be described in detail below. First, push the projection 211 outward by taking advantage of the elasticity of the elastic member 21 until the projection 211 is disengaged from the latch 131. Next, pull the handle 13 upward for unfastening the hard disk 10 which, as stated above, is urged against to the frame 20 and the handle 13. Finally, remove the hard disk 10 from the frame 20. By utilizing the mechanism of the invention, a user can easily install the hard disk 10 in a computer and detach the same from the computer for repair, maintenance, or upgrading.

Referring to FIGS. 1 and 2 again, in the invention there are further provided two abutment plates 16 coupled to pivot points of the hard disk 10 and the handle 13. Both ends of the handle 13 are pivotally coupled at a gap between the sides 11 of the hard disk 10 and the abutment plates 16. As such, the handle 13 can be protected by the abutment plates 16 when the handle 13 contacts a foreign object.

Referring to FIGS. 1 and 2 again, in the invention there is further provided a groove 23 around the projection 211 of the frame 20. The projection 211 is confined in the groove 23. Also, the latch 131 of the handle 13 is engaged with the projection 211 of the frame 20 in the groove 23.

Referring to FIGS. 1 and 2 again, in the invention there is further provided a connector (not shown) in the rear of the hard disk 10. The connector is electrically coupled to the circuitry of the hard disk 10. Correspondingly, a rectangular opening 25 is formed in the rear of the frame 20. The connector is mounted in the opening 25. In response to inserting the hard disk 10 together with the frame 20 into the slot of the computer case, connecting the connector of the hard disk 10 to a mated connector inside the slot of the computer case.

As an end, the circuitry of the hard disk 10 is electrically coupled to the circuitry of the hard disk computer.

Referring to FIGS. 1 and 2 again, in the invention the elastic member 21 is formed of metal having advantages of enhanced elasticity and durability.

5        While the invention has been described by means of specific embodiments, numerous modifications and variations could be made thereto by those skilled in the art without departing from the scope and spirit of the invention set forth in the claims.